

04-B-127 WO



(12) **EUROPEAN PATENT APPLICATION**

(21) Application number: 93120393.9

(51) Int. Cl.<sup>5</sup>: **B60K 37/00**

(22) Date of filing: 17.12.93

(30) Priority: 30.12.92 IT TO921057

(43) Date of publication of application:  
27.07.94 Bulletin 94/30

(84) Designated Contracting States:  
**DE ES FR GB SE**

(71) Applicant: **BORLETTI CLIMATIZZAZIONE S.r.l.**  
Frazione Masio, 24  
I-10046 Poirino (Torino)(IT)

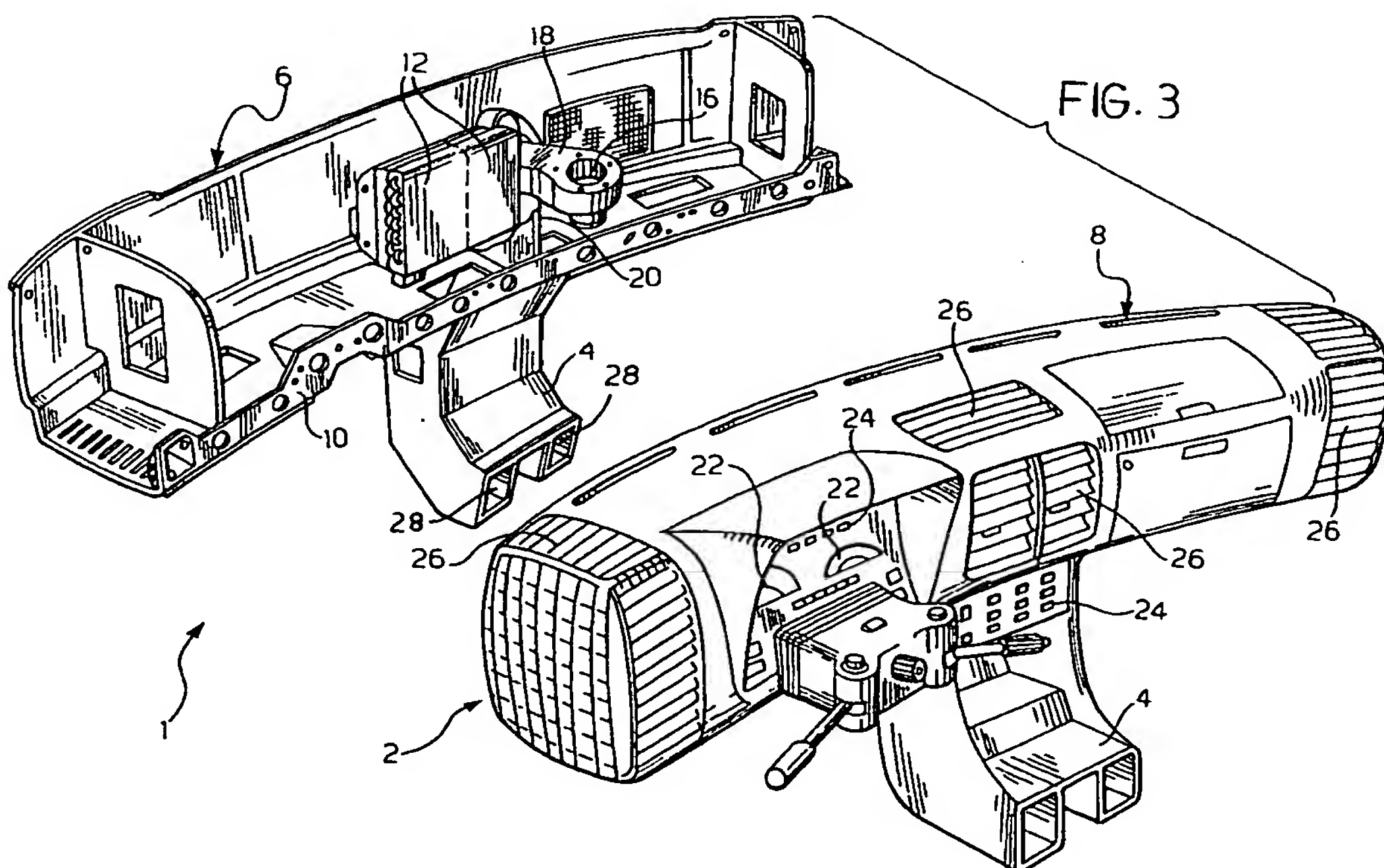
(72) Inventor: **Molari, Aurelio**  
Via Chieri, 4  
I-10025 Pino Torinese (TO)(IT)  
Inventor: **Cristante, Luigi**  
Via XXV Aprile 69/A  
I-10091 Alpignano (TO)(IT)

(74) Representative: **Marchitelli, Mauro et al**  
**Jacobacci-Casetta & Perani S.p.A.**  
Via Alfieri, 17  
I-10121 Torino (IT)

(54) **A dashboard for vehicles, incorporating a heat-exchanger.**

(57) A dashboard for vehicles comprises a body (2) which is located at the base of the windscreen of the vehicle and supports the set of indicating instruments and/or the warning devices and controls (22, 24) of the vehicle. The body (2) defines a single

transverse duct which directs the air-flow from the output of a heat-exchanger (12) to the delivery vents (26). The heat-exchanger (12) is housed in the duct and forms an integral part of the dashboard (1).



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The present invention relates to a dashboard for vehicles according to the preamble to Claim 1.

The document FR-A-2,385,554 describes a dashboard comprising a body located at the base of the windscreen of the vehicle and defining a pair of longitudinal ducts connected to a transverse duct which receives an air-flow which passes through a heat-exchanger.

The object of the present invention is to provide a single device which comprises the dashboard carrying the set of indicating instruments and/or the warning devices and controls of the vehicle, and the heater and/or air-conditioning unit of the vehicle, and which constitutes a preassembled sub-unit which is simpler and lighter than known systems and does not have double walls in correspondence with the heat-exchange system.

According to the invention, this object is achieved by the provision of a dashboard having the characteristics defined in the main claim.

The dashboard according to the invention forms a single body with the air-conditioning unit (including the radiator core for heating and cooling the air and the centrifugal fan) and forms a duct for directing the air-flow to the delivery vents. This solution allows for larger delivery vents from which the air flows into the passenger compartment at a slower speed and hence with less noise. The loss of pressure in the directed air-flow is less than in conventional systems and it is therefore possible to have an electric fan of lower power for a given air-flow or a greater air-flow for an electric fan of a given power. The portion of the dashboard which is visible from the passenger compartment is removable, enabling solutions of different appearance to be provided for a given size and affording access to the equipment disposed within it.

Further characteristics and advantages of the invention will become clear in the course of the detailed description which follows, given purely by way of non-limiting example, with reference to the appended drawings, in which:

Fig. 1 is a schematic, perspective view of a dashboard according to the invention,

Fig. 2 is a schematic view of the dashboard of Fig. 1 without the upper shell which carries the instruments,

Fig. 3 is an exploded, perspective view of the dashboard of Fig. 1,

Fig. 4 shows the detail indicated by the arrow IV in Fig. 1,

Fig. 5 is a section taken on the line V-V of Fig. 4,

Fig. 6 is a front elevational view taken on the arrow VI of Fig. 4,

Fig. 7 is a section taken on the line VII-VII of Fig. 6, and

Figs. 8 and 9 are sections taken on the line VIII-VIII of Fig. 6.

With reference to Figs. 1 to 3, a dashboard, generally indicated 1, is constituted by an upper, substantially tubular body 2 the length of which is equal to the width of the passenger compartment of the vehicle, and a lower, central element 4 which extends essentially vertically and the width and height of which are variable according to the type of vehicle.

With reference to Fig. 3, the tubular body 2 is constituted by a pair of shells 6, 8. The rear shell 6 may be fixed to a metal cross-member 10 and carries an integral heat-exchanger 12 of known type for heating or conditioning an air-flow for the air-conditioning of the vehicle. The heat-exchanger 12 is housed in a seat formed integrally with the rear shell 6. The air-conditioning air-flow is supplied to the heat-exchanger 12 by means of an electric fan 16 which is connected to the heat-exchanger 12 by means of a supply duct 18. The upper shell 8 is fixed removably to the rear shell 6. The shells 6, 8 define between them a single transverse duct for directing the air-flow output from the heat-exchanger 12. The internal walls of the shells 6, 8 constitute the walls of the duct and are preferably covered with a layer of thermally-insulating, sound-deadening material so that the conditioning of the air is not affected by the external temperature of the dashboard, condensation does not form on its external surface, and the noise of the electric fan is attenuated. The transverse duct defined by the shells 6, 8 may have a longitudinal partition 20 (Fig. 3) which enables differently-conditioned air-flows to be directed towards the right-hand and left-hand sides of the vehicle.

The upper shell 8 supports the set of indicating instruments 22 (Figs. 1 and 2) and the warning devices and controls 24 of the vehicle. The upper shell 8 is removable to afford access to the components disposed within it and may be formed differently according to the different equipment and fittings of the models, but the rear shell 6 remains unchanged for given dimensions of the passenger compartment of the vehicle.

The upper shell 8 and the lower shell 6 have a plurality of pre-oriented or orientable grilles 26 for diffusing the air-conditioning air-flow into the passenger compartment of the vehicle. The diffuser grilles may be larger than those used in conventional systems, since their dimensions are not restricted by the air ducts. The grilles 26 are associated with conventional devices (not shown in the drawings) for shutting off the flow. The elements for shutting off the air-flow through the grilles 26 may be operated by actuators controlled by an electronic control unit which operates the shutters according to a predetermined programme. The air

admitted to the passenger compartment may also be shut off manually and at will by the direct operation of the shutters associated with the grilles 26. The base of the lower central element 4 has a pair of vents 28 which enable the conditioned air to reach the rear seats in the passenger compartment. The vents 28 are connected to the transverse duct by means of a pair of holes 30 (Fig. 2) in the internal wall of the rear shell 6.

With reference to Figs 4 to 9, the dashboard according to the invention has a glove compartment 32 which has a wall 34 with holes 36 which put the interior of the glove compartment 32 into communication with the air-conditioning duct. The air-flow which enters through the holes 36 heats or cools the contents of the glove compartment 32 and leaves the compartment 32 through a grille 38 which communicates with the passenger compartment. A slidable shutter 39 associated with the wall 34 chokes the main duct to the benefit of the air-flow through the compartment 32. The member 39 is controlled by a manually-operable lever 40. The door for closing the glove compartment 32 has a hole or a transparent portion 42 facing a lamp 44 which indicates whether the shutter 39 is in the configuration which corresponds to a free flow of air-conditioning air through the interior of the glove compartment 32.

#### Claims

1. A dashboard for vehicles, comprising a body (2) which is located at the base of the wind-screen of the vehicle and supports the set of indicating instruments and/or warning devices and controls (22, 24) of the vehicle, and a ventilation system including:

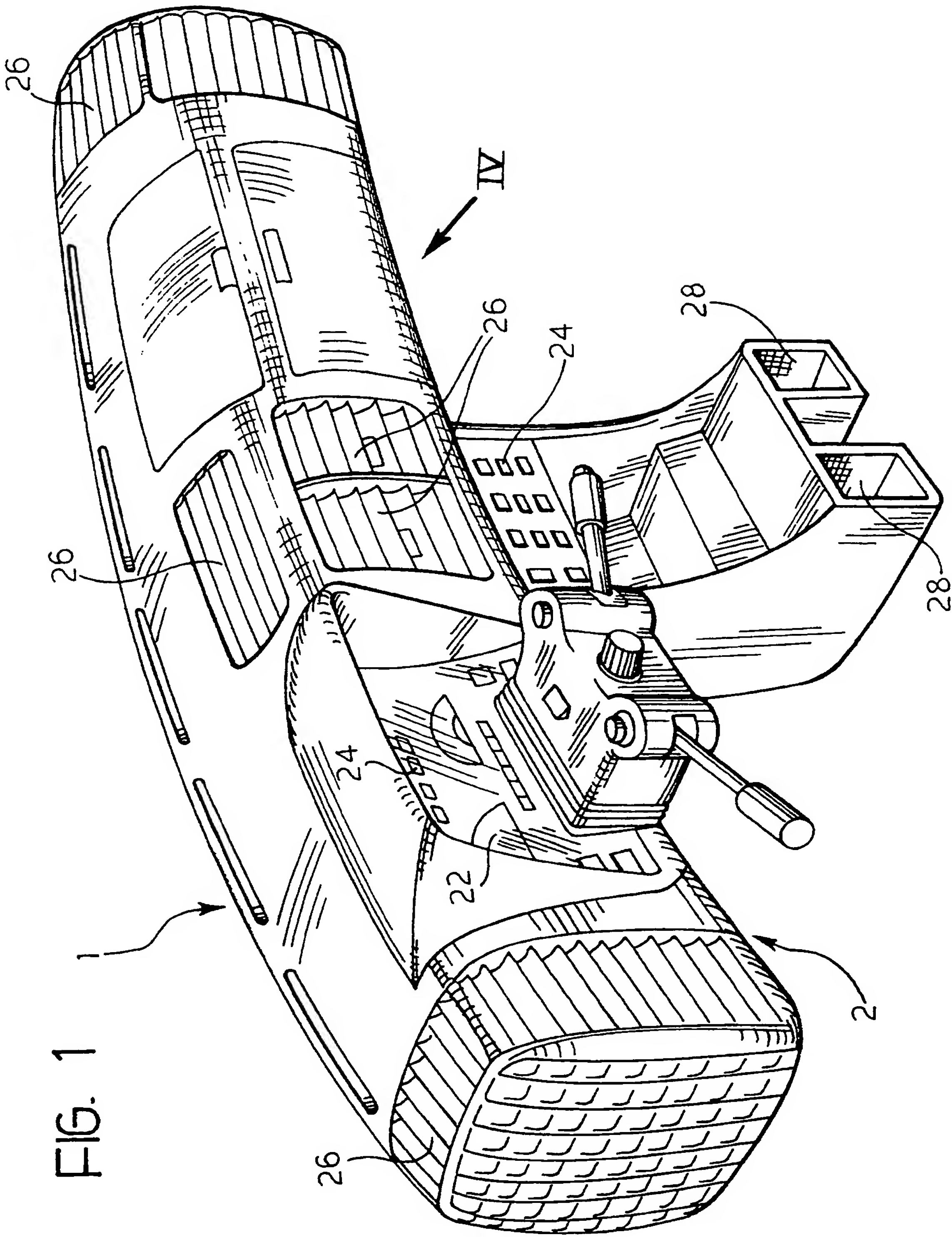
- a heat-exchange device (12),
- a duct (18) for supplying an air-flow to the heat-exchanger (12),
- a plurality of delivery vents (26, 28) in the body (2) for supplying the ventilation air-flow to the passenger compartment of the vehicle, and
- a distribution system which directs the air-flow from the output of the heat-exchanger (12) to the delivery vents (26),

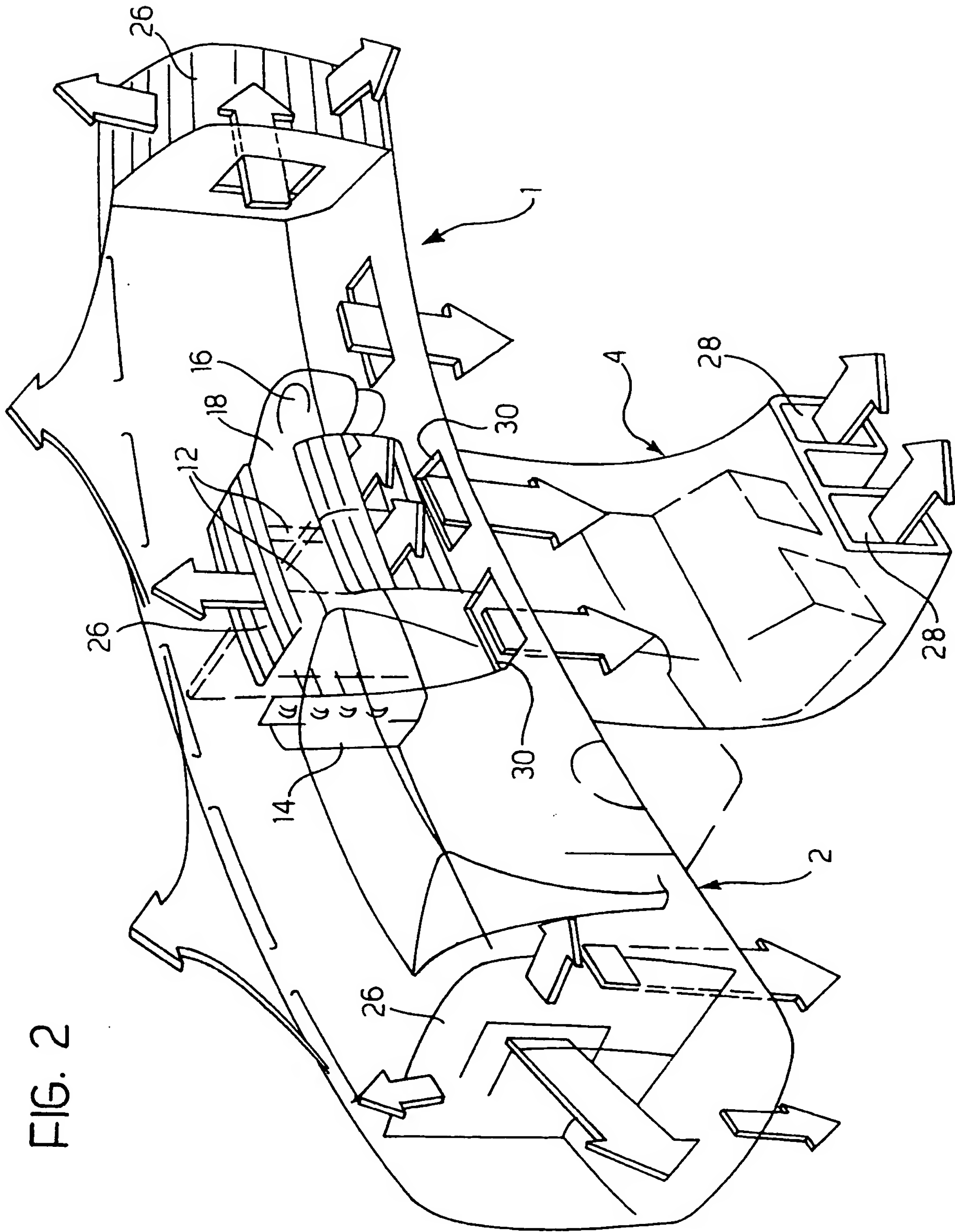
characterized in that the distribution system is constituted by a single transverse duct defined by the walls of the body (2), and in that the heat-exchanger (12) is housed in the duct and forms an integral part of the dashboard.

2. A dashboard according to Claim 1, characterized in that the duct has a longitudinal partition (20) which is disposed essentially in the vicinity of the centreline of the vehicle and divides the air-flow from the heat-exchanger (21)

into two parts.

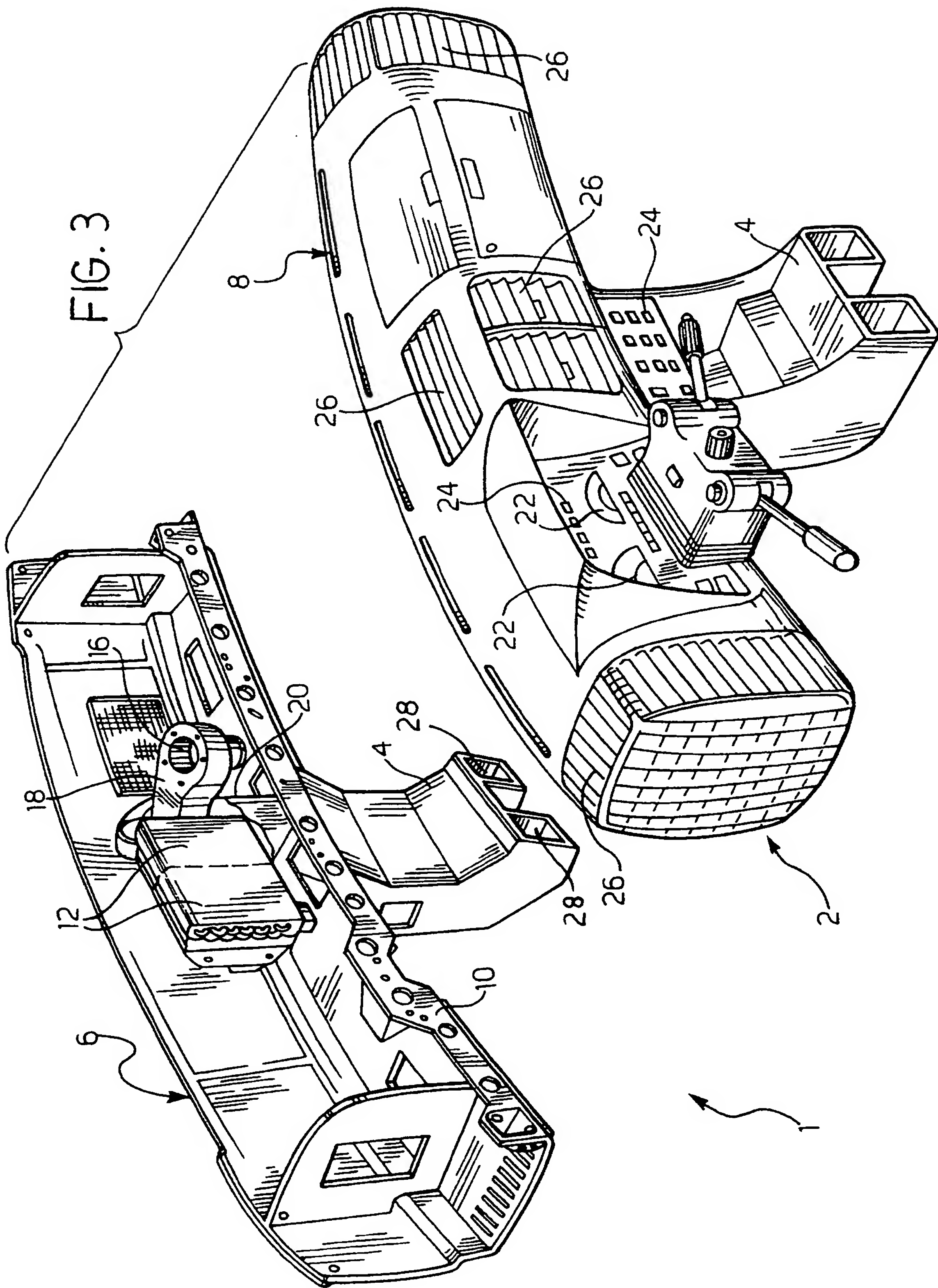
3. A dashboard according to Claim 1, characterized in that the body (2) comprises a rear shell (6) with means for supporting the heat-exchanger (12) and a removable upper shell (8) which supports the indicating instruments and/or the warning devices and controls (22, 24) of the vehicle, the assembled shells (6, 8) defining the duct between them.
4. A dashboard according to Claim 3, characterized in that the internal surfaces of the shells (6, 8) are at least partially covered with thermally-insulating and sound-deadening material.
5. A dashboard according to Claim 1, characterized in that it comprises a glove compartment (32) which extends within the duct and is struck by the air-flow from the heat-exchanger (12), the interior of the glove compartment communicating with the duct by means of at least one hole (36) associated with controllable shutter means (39).
6. A dashboard according to Claim 5, characterized in that it comprises means (44) for indicating the condition in which the shutter means (39) enable a conditioned air-flow to pass through the space inside the glove compartment (32).
7. A dashboard according to Claim 1, characterized in that the air-flow can be controlled either manually or automatically.

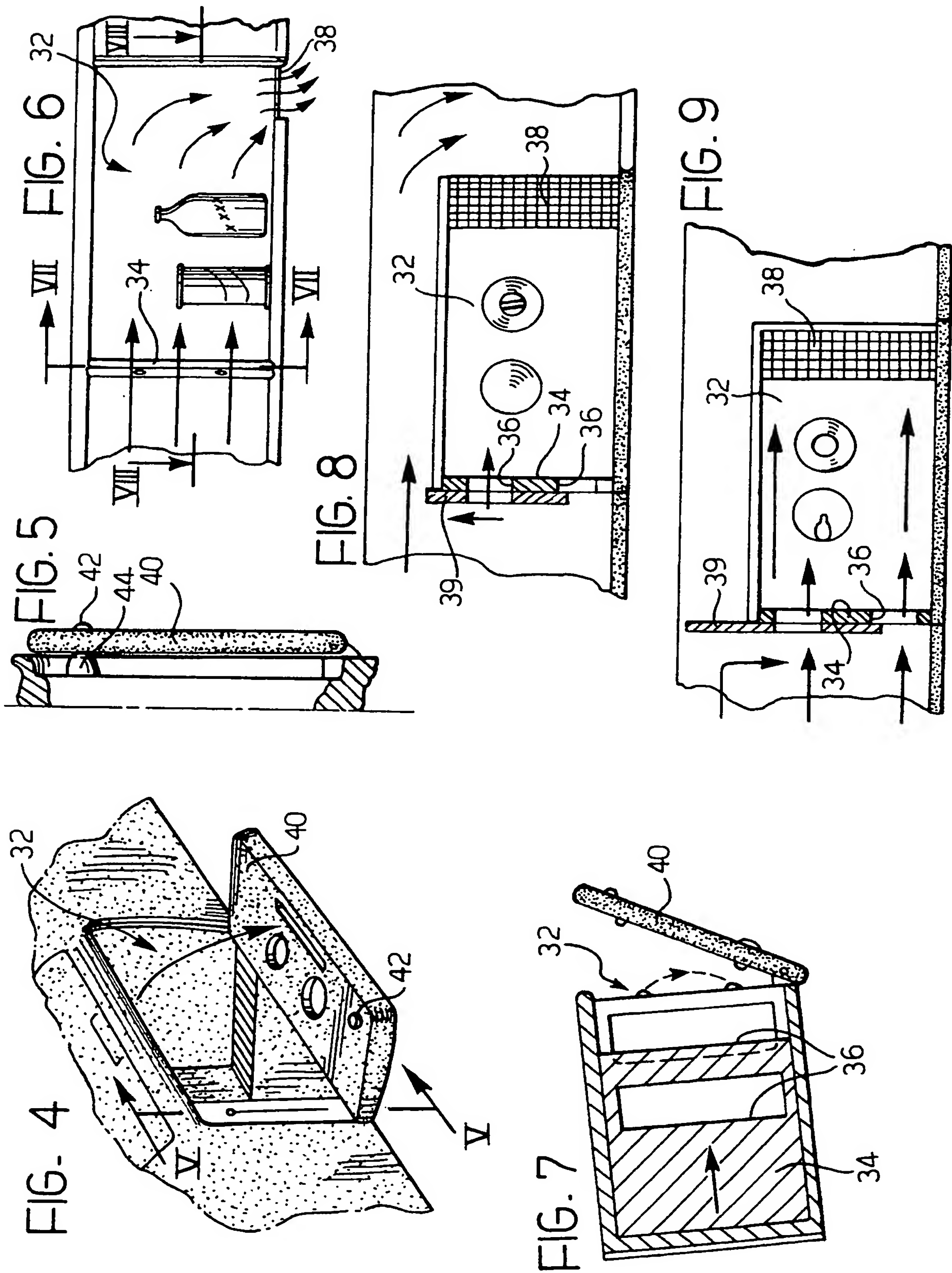




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European Patent  
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## EUROPEAN SEARCH REPORT

Application Number  
EP 93 12 0393

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	EP-A-0 185 856 (FORD) * claim 1 * * page 6, line 9 - page 8, line 12 * * figures 1-6 *	1, 3, 4	B60K37/00
A	---	5	
D,A	FR-A-2 385 554 (HONDA) * page 1, line 4 - line 15 * * figures 1-7 *	1-3, 7	
A	EP-A-0 108 522 (FORD) * abstract * * figures 1-7 * -----	1, 2, 7	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			B60K B60H
Place of search THE HAGUE		Date of completion of the search 5 April 1994	Examiner Clasen, M
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			

EPO FORM 1503 (03.92) (P04C01)